

skin show no changes in the blood or urine. (2) Moderately severe and severe cases of mustard gas burns of the skin with some involvement of the upper respiratory tract show after the first week definite changes in urine, blood urea and blood. (3) The urinary changes consist in a diminution of the urinary output, increased concentration and acidity, albuminuria, and diminished urea and chloride output. In the sediment there may be found casts, renal epithelium, red blood cells and an increased number of leukocytes. Under forced fluids prompt improvement occurs. (4) Coincident with these urinary changes the blood urea is found to be high, but approaches normal with the improvement in the urinary condition when fluids are forced. (5) The blood shows a slight secondary anemia with a well-marked polymorphonuclear leukocytosis, a definite eosinophilia, and the appearance of myelocytes and young forms of leukocytes. The blood platelets were usually increased. No evidence of hemolysis was found. These changes indicate a disturbance in the white cell formation rather than in the red blood cell group. No leukopenia was noted at any time. The leukocytosis reached its height coincidently with the height of the secondary infection and fell with the improvement of the infection. (6) The temperature, pulse and respiration charts show in the severe cases an initial period of shock. With the development of the necrosis and the secondary infection there is a corresponding febrile reaction. (7) The bacteriological examination of the infected skin lesions and furuncles showed constantly the presence of *Staphylococcus pyogenes aureus*. In the one bronchial cast obtained streptococci were present. (8) We believe that the changes in the blood and urine may be interpreted as dependent upon the secondary infection and, in part, possibly, to the absorption of toxic products from the necrotic skin, rather than to any direct toxic action of mustard gas.

THERAPEUTICS

UNDER THE CHARGE OF

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An Experimental Investigation of the Cause of Early Death from Arsphenamine and of Certain Other Features of the Pharmacological Action of the Substance.—In the present series of experiments, JACKSON and SMITH (*Jour. Pharm. and Exp. Therap.*, 1918, xii, 221) have investigated the mechanism of acute death following the administration of arsphenamine. They studied especially the effects of various preparations of arsphenamine on the cardiovascular system with a view of discovering the cause of the acute reaction often seen in the clinic. They report that the slow injection of therapeutic quantities of arsphenamine in very dilute alkaline solution produces no striking results in anesthetized dogs. However, as the rate of injection and the concen-

tration of the drug are increased, toxic symptoms soon become manifest. The earliest of these symptoms consist in a dilatation of the heart, perhaps mainly of the right side at first; a progressively increasing pulmonary blood-pressure, and a slow, gradual, but not severe, fall of systemic pressure. The cause of the rise in pulmonary arterial pressure is believed to be due partly to the alkalinity of the solutions of arsphenamine used, and partly to the specific action of the drug itself. While the authors have not been able to prove that the formation of emboli in the pulmonary vessels may not be in part responsible for the increased pulmonary pressure, they believe that no such action as this occurs. With large, toxic doses, the right heart may have to contract against a pulmonary pressure increased by 100 per cent. above the normal, while at the same time the left ventricle may be contracting against a systemic pressure reduced by 25 to 50 per cent. below normal. These peculiar conditions may tend to establish a state of increased irritability and instability in the heart, and in rare instances may lead to delirium cordis. Drugs of the epinephrin type tend to increase the instability of the heart under these conditions. The reactions of the internal organs when arsphenamine is injected are variable. Apparently both central and peripheral influences are concerned. As a rule, oncometric tracings of the spleen and intestinal loop show a dilatation, while the kidney usually contracts, sometimes most vigorously. The toxicity of arsphenamine is not increased by the breathing of high concentrations of carbon dioxide nor by the injection of calcium hydroxide, calcium lactate or of monosodium phosphate. A number of intermediate compounds, occurring during the process of manufacture of arsphenamine, were also studied. None of these is very poisonous and none can account for the variable toxicity of the different samples of arsphenamine, which may or may not contain traces of one or more than one of these. The authors suggest that in those cases in which severe, acute, toxic symptoms suddenly manifest themselves, either during or shortly after the intravenous injection of arsphenamine, tyramine is more likely to be of benefit to the patient than is any other drug with which they are acquainted.

The Application of a Concentrated Solution of Magnesium Sulphate to Scalds and Burns.—MELTZER (*Jour. Pharm. and Exp. Therap.*, 1918, xii, 211) reports that burns of the first and second degree are invariably arrested in their development when molecular solutions of magnesium sulphate have been applied early. Third degree burns run, as a rule, a more favorable course under the application of magnesium sulphate than under any other treatment. Higher concentrations than 25 per cent. seem to exert a still better influence. The favorable action of the application of magnesium sulphate in advanced stages of burns of the second and third degree is less striking, especially on account of the infection present, but even then it seems to exert a favorable influence and ought to be used in combination or alternatingly with antiseptics.

GYNECOLOGY

UNDER THE CHARGE OF

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Magnesium Sulphate Solutions in the Treatment of Spastic Contractures of the Rectum and Sigmoid Colon.—Through repeated sigmoidoscopic and roentgenologic studies, SOPER (*Am. Jour. Med. Sc.*, 1918, clvi, 205) has found that spastic contractures of the lower colon and rectum of varying intensity play an important part in the etiology of many cases of chronic constipation and of the gas pains and abdominal distention following operations on the abdomen and pelvis. The most frequent site for these contractures is the rectosigmoid juncture, severe contractures at this point presenting a syndrome described by the writer as "signoido-spasm." A most obstinate form of constipation, he finds results from combined contractures and dilatations, *e. g.*, (a) atony of the rectum and sigmoid associated with contracture at descending colon; (b) contraction at the rectosigmoid angle and atony of the sigmoid loop; (c) contracture at the splenic flexure and descending colon and atony of the cecum. The contractures, he feels, are the result of disturbances in Meltzer's law of contrary innervation, a predominance of stimulation occurring in the exciting or contractile phase. Reasoning on the basis of Meltzer's experimental work, which showed that solutions of magnesium sulphate produce an inhibitory influence upon peristaltic movements of the intestinal tract when the salt is given intravenously or applied directly to the mucosa, the writer has applied a saturated solution of magnesium sulphate directly to the contractures in a series of 220 cases. He applied the solution by means of cotton applicators through the sigmoidoscopic tube (knee-chest position), a diffuse, pink color appearing in the mucosa within from ten to twenty seconds. Mild contractures disappeared in a few seconds. Moderate contractures required a minute or two, and in order to relax strong spasms a series of applications were necessary. Of 80 cases of obstinate constipation, 68 cases were apparently completely restored to a condition of normal colonic function. The number of treatments required in these cases varied from ten to thirty applications given every second or third day. Five cases were complicated by inflammatory induration and distortion of the bowel at the rectosigmoid junction, consequently treatment was ineffectual. In 7 cases the contractures were overcome, but normal colonic function was not restored. Of 72 cases of obstinate spastic constipation, *i. e.*, cases that were of long standing but that had not been previously under his care, 64 were successfully treated, with satisfactory restoration of bowel function. Eight cases were extremely neurotic individuals who could not stand the treatment, although no real pain is produced by it. Sixty-eight cases of obstinate spastic constipation, cases of long-standing constipation, but which presented contractures that were moderate in character, *i. e.*, that readily responded to treatment and required but from six

to ten applications to restore good colonic function. The patient is asked to return for treatment every second day, the interval between treatments being gradually lengthened. All purgatives and water enemata are discontinued; an oil enema may be used if the patient is unable to come for treatment at the proper time. If the contracture cannot be reached through the sigmoidoscope, two ounces of the solution may be injected by passing a soft-rubber catheter through the sigmoid tube. Roentgenological examination in a series of 6 cases of postoperative abdominal distention and gas pains showed that the colon alone was involved; sigmoidoscopic examination showed the presence of marked contractions in the rectum and lower sigmoid. In a series of 30 such cases an enema of saturated solution of magnesium sulphate was given according to the following technic: Three ounces of saturated solution of magnesium sulphate is introduced by means of the rectal tube passed four or five inches into the bowel, elevating the hips whenever possible and having it retained as long as possible. This procedure may be repeated every day or several times a day if so desired. There was immediate relief in 24 cases. While the enema was usually retained only about five minutes, there were no toxic effects when it was retained for twenty-four hours.

Rational Preoperative Treatment, with Special Reference to Purgation.—In a recent paper PEET (*Jour. Am. Med. Assn.*, 1918, lxxi, 175) has pointed out the many advantages of the simple enema over the various forms of pre-operative catharsis so widely employed. The administration of cathartics on the night preceding operation is followed almost invariably by loss of sleep, psychic and physical weakness, loss of body and intestinal fluids, change in the bacterial flora of the intestine, hypotonicity of the intestinal wall and irritability of the rectum and lower colon. Postoperative thirst after such a preparation must necessarily be greater, and because of the higher degree of irritability of the rectum, thirst cannot be relieved by the easiest and safest method. It is impossible, even with a powerful purgative, to eliminate all the intestinal products which might lead to putrefaction, since waste products are continuously passing into the intestines. Moreover, attempts at sterilization by calomel and other drugs, the writer feels, are useless. While many organisms are carried out, there is a tendency to change in the bacterial flora, usually in the direction of multiplication of fermentative organisms. Clinical evidence favors a change to the simple enema. For the past six years a careful study was made of patients receiving pre-operative catharsis and those receiving the simple enema only. In the latter cases postoperative thirst, nausea and vomiting occurred much less frequently, and the patients were in much better mental and physical condition at the time of the operation.

Is the Purgation of Patients Before Operation Justifiable?—On the basis of an extensive clinical and experimental study, ALVAREZ (*Surg. Gynec. and Obst.*, 1918, xxvi, 651) goes a step further than the previous article and advocates that even the simple pre-operative enema be avoided unless absolutely necessary, that food be given as late as possible before operation, that water and solid food be given by mouth as soon after operation as possible and that purgatives should be abso-

lutely avoided both before and after operation. The writer sums up his reasons for avoiding purgatives before operations as follows: (1) Some of the purgatives owe their effects to the fact that they are irritant poisons that must be removed quickly from the body. Others act by interfering with intestinal absorption and by upsetting the balance of salts. In either case they bring about pathological conditions. The body is weakened and not strengthened. (2) We know now that the dehydration of the body and the upset in salt balance are bad, particularly before an operation in which there may be hemorrhage and vomiting. (3) With magnesium sulphate there may be an increased amount of fluid in the bowel to disturb those who want it empty. In operations on the colon, liquid contents are more difficult to control mechanically than are solid masses. (4) There is an increased growth of bacteria. There is some evidence that there is an increased absorption of toxins, and a greater permeability of the mucous membrane to bacteria. Undigested food may be carried down into the colon to supply increased pabulum for the bacteria. (5) By weakening some parts of the bowel and making others more irritable the even flow of material from stomach to anus is rendered impossible. (6) Whether from disturbances in motility, in absorption, in the circulation or in the bacterial conditions there certainly is a tendency to flatulence and distention. (7) When the bowels must move frequently during the night the loss of sleep is considerable. The purgation is particularly trying if the patient is wearing a large cast, has a broken leg or other painful lesion which makes each resort to the bedpan an ordeal. (8) If the patient should happen to have some intestinal obstruction, a gangrenous appendix, a badly diseased Meckel's diverticulum or adhesions forming around some pus, purgation may directly cause death. (9) Purgation makes the bowel react so poorly to drugs that there may be grave difficulties in meeting post-operative emergencies. (10) Emptying the bowel by starvation and purging makes the resumption of colonic activity much more difficult. The colon must be filled and distended to a certain extent before it will empty. (11) The fact that children and nervous women will sometimes begin vomiting during the night, before the operation, shows that the purge must be responsible for some of the postoperative nausea and vomiting. The ether adds the finishing touches to what was begun the night before. These conclusions were reached as the result of a series of experiments on purged animals conducted by the writer and F. B. Taylor. They studied the effects of castor oil, magnesium sulphate, cascara, calomel and tincture of jalap on rabbits by excising segments of the intestines from five different points, placing them in warm oxygenated Ringer's solution and noting changes in the gradients of rhythmicity, irritability or latent period. Only mildly laxative doses were used; the drugs were given at noon and the animals killed next morning. The bowels were found injected, full of fluid and gas, sometimes atonic and flabby, often irritable here and there and inclined to contract down into hard white cords. When the segments were placed in Ringer's solution their contractions were weak and irregular and they soon became fatigued. One of the most important points noted was the diminished sensitivity to the local application of drugs, some having to be increased one hundred times. Magnesium sulphate appeared to be the most objectionable from the surgical standpoint,

since by preventing the absorption of water it causes great distention of the bowels with fluid. Calomel and cascara did not cause such pronounced signs of poisoning and fatigue in the excised segments as did castor oil, magnesium sulphate and jalap. The segments from the calomel rabbits beat well with a large amplitude and slow regular rhythm. The gradient of rhythm showed irregularity only in the animals that had received castor oil. The latent periods of the segments showed marked deviations. Some segments showed an abnormally high degree of irritability with a very short latent period, others scarcely respond to the strongest current. Normally the latent periods are graded from short ones in the duodenum to longer ones in the ileum. The engorgement of the mesenteric vessels and the injection of the intestinal wall were quite sufficient to upset the delicate balance between the gases in the intestine and those in the blood. Besides omitting the purgative the night before, the writer suggests that if the operation is not to be performed earlier than 10 A.M., a light breakfast may be eaten, although in occasional cases, of course, fear and apprehension may lengthen the emptying time of the stomach. Enemata should be given only to those who are definitely constipated or who are to have an operation on the lower colon or on the pelvic organs. Furthermore, gas-oxygen should have preference over ether whenever possible, as its effects on the digestive tract are much less. The importance of giving solid food as soon as possible after operation is strongly emphasized by the writer, because of its tonic effect on the tract, but cellulose should be avoided. The postoperative use of purgatives is quite as bad as their pre-operative administrations.

Vertigo of the Menopause.—Although vertigo is seldom the only prominent symptom of the menopause, since it is almost always accompanied by such disturbances as hot and cold flashes, cold perspiration, palpitation, blurred vision, flickering before the eyes, headache, nausea, etc., nevertheless it is one of the most interesting phenomena that occur at this important time of life and has been the subject of investigation by SANES (*Am. Jour. Obst.*, 1919, lxxix, 7). Like most other investigators who have studied this condition, he attributes the vertigo to a lack of the internal secretion of the ovary and most of his contribution has to deal with the question of treatment. Before any plan of treatment is decided upon, one must make sure that the case is one of climacteric vertigo. Such pathological conditions as lesions of the internal ear or of any other part of the balance mechanism, such diseases as cardiovascular, renal and ocular, especially muscular unbalance of eyes, must be excluded. If the case can be definitely diagnosed as that of climacteric vertigo, the treatment must always be that of the menopause in general. As the metabolism is almost always below par in the menopause, the nutrition and elimination of the patient must be looked after and, as the insufficiency or absence of the ovarian internal secretion is the underlying cause of the symptoms, ovarian organotherapy is logically indicated. Sanes reminds us however, that we do not know the active principle of the internal ovarian secretions; in fact, we do not even know definitely which part or parts of the ovarian substance (Graafian follicle, corpus luteum or the interstitial cells) is responsible for the internal secretion. It seems plausible there-

fore, that if by the administration of glandular tissues we can successfully replace a deficiency in internal secretion of the gland, the whole ovarian substance, in the present state of organotherapy, should meet best the needs of a menopause patient. For this reason Sanes prefers using the whole ovarian substance in the treatment of climacteric disturbances in general and vertigo in particular. There is one difficulty that is met by those who prescribe glandular extracts and that is the lack of standardization of the preparations. One must specify the name of the manufacturer or the proprietary name of the ovarian preparations to get the dosage desired, since one manufacturer will base the dosage of an ovarian preparation on the quantity of the *fresh* ovarian substance in it, while other manufacturers will base their product on the amount of *desiccated* substance contained. Sanes uses a preparation of ovarian extract, each grain of which represents a grain of the fresh ovarian substance, the dosage being 5 grains two to four times a day. Larger doses were only occasionally found to be of any more benefit than the small doses routinely used. In this study, the records showed that about 37 per cent. of the cases were improved, while in 25 per cent. there was complete control of the vertigo by using the ovarian extract. In an occasional case, the addition of a small dose of thyroid extract to the ovarian extract seemed to have been a benefit.

Pathology of Chronic Metritis.—Chronic metritis and chronic subinvolution of the uterus are two gynecological conditions, which, until recently, have been considerably confused and although these terms are frequently used by practitioners, they are frequently used interchangeably and many times when the user has a hazy conception of the condition that he is describing. It might be worth while then, to glance at the conclusions reached by SCHWARZ (*Am. Jour. Obst.*, 1919, lxxix, 63) in a rather extensive study of this subject. He states that chronic subinvolution alone is by far the most frequent cause of enlarged uteri, causing hemorrhage, pain or leucorrhea. The thickness of the uterine wall is due, in order of their importance, to an increase of the elastic tissue, edema and liquefaction of the connective tissue and hypertrophy or enlargement of the individual cells. Chronic metritis as a true inflammatory condition does exist and is frequently responsible for the symptoms in these enlarged uteri. However, chronic metritis locally is never a primary disease, but is secondary to chronic endometritis, chronic salpingitis or chronic inflammation within the pelvis. It should be remembered that chronic subinvolution and chronic metritis may coexist in the same uterus. Chronic pelvic inflammation is only occasionally seen in connection with chronic subinvolution and therefore other factors must play a greater role in the production of this condition; for example, in Schwarz's series of 38 cases, there were only 6 that showed inflamed appendages and only 7 had chronic endometritis. Schwarz believes that the term "chronic metritis" should be abolished from the clinical standpoint. The term chronic subinvolution might be substituted in cases of multiparous uteri, which are definitely enlarged, and cause symptoms without evidence of pelvic inflammation. This would probably include over 80 per cent. of the uteri which, pathologically show signs of chronic subinvolution. The term chronic metritis might be applied to those cases in which there

is evidence of pelvic inflammation in connection with a more or less immovable uterus. This would, in all probability, embrace a greater portion of cases of true chronic metritis, as well as those in which there is a distinct overlapping of both conditions. In addition to placing a majority of these cases, clinically, in a class descriptive of their pathology, there is another advantage of using the term chronic subinvolution, since the frequency of its occurrence will be constantly impressed upon the observer. The condition, of necessity, must result from a lack of involution of the puerperal uterus, therefore its prevention lies in the proper care of patients during pregnancy labor, and the puerperium.

OPHTHALMOLOGY

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Ocular Affections in Typhoid.—DANTRELLE (*Inaugural Thesis, Annali, D'Oculist*, October–November, 1918, p. 529) has studied ocular manifestations observed during an epidemic of typhoid fever. He classifies them as symptoms and complications. *Symptoms:* Conjunctival hyperemia occurs ordinarily with the rise in temperature, frequently intense, it continues at times during the entire febrile period and occasionally even during defervescence. The frequency of this symptom is shown by the fact that during an epidemic many cases are sent to the ophthalmic departments with the diagnosis of acute conjunctivitis when the case is one of typhoid fever. Subconjunctival ecchymoses of the size of a head of a pin to that of a pea are frequently observed upon the course of a subconjunctival vessel, and occupying the inferior cul-de-sac or the bulbar conjunctiva near the limbus. Ciliary alopecia is inconstant; it sometimes accompanies alopecia of the hairy scalp. Myosis occurs as does also photophobia. The fundus frequently presents slight hyperemia of the papilla which recovers entirely. *Complications:* Complications are observed in about 1 per cent. of the cases; Dantrelle has noted 65. He divides them into those due probably to the unknown organism of the disease; these are quite rare, the others occur during convalescence and are caused by adventitious infections. Cataract (7 cases) begins on the tenth to the fifteenth day of the disease; it is accompanied by discoloration of the iris; as the subjects are usually young, the cataract is soft. Alterations of the fundus (11 cases) consist either in papillary lesions or in those of the retinal circulation. These lesions are characterized by a vascular pigmentation; the pigment surrounds the arterial or venous branches forming a pigmented network upon the vessels; they are accompanied

by grave and definite functional disturbances. The papillary lesions are simple atrophy following optic neuritis. Ocular palsies (3 cases) of the third or sixth pair have occurred during the height of the affection. As complications of convalescence, the author notes palpebral abscess, orbital phlegmon, corneal ulcers, optic atrophy following erysipelas, or phlegmon of the orbit. These late complications are due to the streptococcus; antistreptococcal serotherapy appears to be of some service.

Acute Anterior Ethmoiditis in Young Subjects.—STEPHENSON (*British Jour. Ophthal.*, No. 8, ii, 416) writes that in his experience a form of unilateral orbital inflammation or suppuration is not infrequent in young children under five years of age, although its essential nature is not always recognized. Many of the milder cases recover spontaneously with or without a discharge of pus from the nostrils or into the nasopharynx. A certain number of cases are diagnosed at a later stage as orbital cellulitis, as shown by tenderness, edema and redness of the eyelids, chemosis and protrusion and impaired motility of the eyeball, which is usually displaced downward or downward and outward. General symptoms, such as fever, headache, vomiting, etc., are usually present in the more severe cases. As a rule, there is no history of injury, or of erysipelas, or any other local or general malady or illness. The reporter believes that this group of cases can be best explained by an acute inflammation of the anterior ethmoidal cells: in certain of the more severe cases the posterior ethmoidal cells may also be involved. The condition is not accompanied by any ophthalmoscopic nor rhinoscopic signs. Recovery is the rule under the simplest measures. When symptoms are severe, or the general condition of the patient is threatening, surgical measures must be adopted: an incision into the orbit over any spot which seems to indicate underlying pus. If nothing escapes, the dressing forceps, with closed blades, are introduced into the depth of the wound, and the blades of the instrument are then more or less widely separated; pus may make its appearance two or three days later. The writer has adapted as a routine measure a somewhat different procedure, which consists of raising the bone over the region of the anterior ethmoidal cells when pus usually escapes. The prognosis is favorable.

Blood Cysts of the Orbit.—GIFFORD (*Am. Jour. Ophthal.*, September, 1918, p. 625) concludes that in every case of deep-seated orbital tumor of uncertain nature the possibility of blood cyst and some other benign cyst should be considered. If an operation is done the tumor, on being exposed, should be secured by passing a thread through it and its nature tested by puncture. If it proves to be a cyst, thorough cauterization with phenol or something similar should be tried before an attempt is made to extirpate it.

Observation of the Fundus During Temporary Blindness.—ORMOND (*British Jour. Ophthal.*, May, 1918, p. 273), during an attack of ephemeral amblyopia, observed in the fundus four or five distinct notching of the inferior retinal vein, which suddenly disappeared, with simultaneous return of the vision; the pupil, which was enlarged during the

crisis, became contracted. The reporter thinks the condition to have been due to contraction of a central artery entailing pallor of the disk and surrounding retina, with a diminution of blood in the vein, causing the endothelium of the vein to become wrinkled into horizontal folds as the vessel became empty. Neither cardiac, vascular nor renal disease was demonstrated.

Tuberculin in Ocular Disease.—VERHEYDEN (*British Jour. Ophthal.*, April, 1918, p. 223) finds that tuberculin gives good results in phlyctenular kerato-conjunctivitis, especially as regards photophobia, blepharospasm, lacrimation, but does not prevent relapses, although the latter when they occur are milder; the usual local treatment is also employed. Scleritis and episcleritis are more rebellious; the other etiologic factors of these affections should be eliminated before having recourse to tuberculin. One case of iridocyclitis, probably bacillary, recovered by local treatment and six injections of tuberculin. One case of paralysis of the third pair, of tubercular origin, with double ptosis, paralysis of the right superior rectus and slight diplopia, recovered after a relapse during the course of the treatment, which consisted of six injections of tuberculin (0.001 to 0.009) made during an interval of nine months.

A New Sign of Death.—LECHA-MARZO (*Archiv Med. Belg.*, March, 1918, p. 271) calls attention to a sign of death applicable in civil life as well as upon the battle-field. It consists in placing a piece of turmeric paper upon the globe under the lids; in life, slight pressure gives a bluish spot, but no change in color is observed in the cadaver; in fact, the red color at times appears more pronounced. In the living, ocular acidity is never observed; immediately after death the reaction is slightly alkaline as in life, shortly after death the reaction is neutral and finally acid. This ocular acidity makes its appearance almost uniformly during the eight hours following death.

PATHOLOGY AND BACTERIOLOGY

UNDER THE CHARGE OF

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Method of Collecting Blood for the Wassermann Test.—WANG (*Jour. Path. and Bact.*, 1918, xxii, 85) advocates a simple method for collecting the patient's blood for the Wassermann reaction. The blood is collected upon pieces of filter paper about the size of a dime. This blood can easily be obtained as a drop from the finger or the lobe of the ear. He estimates that each drop collected in this way upon the paper contains 0.04 c.c. of serum. Upon collection, these small pieces of paper